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THE JOURNAL OF
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THE RELATION OF A REMEDIAL READING PROGRAM TO SCHOLASTIC SUCCESS IN COLLEGE*

RICHARD W. KILBY

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The purpose of this study was to investigate the relation of a remedial reading program† to improvement in scholastic standing.‡ Four aspects of this relation were studied: (1) the value of a remedial reading program for improving grades in general; (2) the value of a remedial reading program for improving grades in particular subjects or in groups of related subjects; (3) which students improved scholastically as a result of the remedial instruction; (4) what kind of remedial reading program is valuable for improving grades.

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* This paper is part of a dissertation which was presented for the degree of Doctor of Philosophy in Yale University.

The remedial reading program of Yale University is offered by the Freshman Year and is directed by J. Richard Wittenborn, Clinical Psychologist. I am indebted to Dr. Wittenborn for permission to use the research facilities of the Division of Student Mental Hygiene and for the opportunity to study members of the Class of 1946.

† This study is concerned with group remedial procedures as opposed to individual procedures. While individualized instruction in a special reading clinic is probably more effective than group instruction, the much greater cost of the former has caused most colleges to limit their offering to group instruction, using regular classrooms. As long as the group situation persists, experimentation on group procedures must be carried on to determine which are most effective.

‡ The term 'remedial' is used in this study to refer to teaching procedures intended to correct harmful reading habits and to develop new efficient ones. This includes procedures sometimes called 'corrective,' and is consistent with current usage.

DESIGN OF EXPERIMENT

Selection of remedial reading students.—The Iowa Silent Reading Test was given to the five hundred students comprising the freshman class which entered Yale University in July, 1943, half of the class taking Form Am, the other half Form Bm. To those students whose median standard scores were below 94, letters were sent advising them to enroll in one of the speeded-reading classes; those students whose median standard scores were between 94 and 100 were informed that it would be beneficial for them to enroll in a speeded-reading class; those whose median standard scores were above 100 were told that their reading abilities were adequate and they need not enroll. This triple division was an arbitrary one; the critical scores could as well have been above or below those chosen. No experimental evidence is available to show exactly who should receive remedial instruction and who should not.

Characteristics of the experimental group.—The group of one hundred ten students who enrolled and completed the first half of the course was compared with the total freshman class from which they were drawn with respect to General Prediction (referred to hereafter as GP), Scholastic Aptitude Test (SAT), and Iowa Silent Reading Test (ISR) scores. GP score is a forecast of the average grade the student will probably earn and is derived from College Entrance Examination Board aptitude and achievement test scores and the adjusted high-school grade average. Such a forecast is commonly called a 'predicted grade' or 'predicted score.' Since predicted grade scores are not alike from school to school, GP score will be used to refer to the particular predicted grade used at Yale University.

Comparison of the remedial group with the total freshman class revealed these facts: (1) the remedial group means on the above three variables were below the class means, as would be expected; (2) this remedial group is probably superior on the three above criteria to almost all of the groups used in previous remedial reading studies because the means in predicted grade and scholastic aptitude are almost as high as the class means; the group's SAT mean of 526 is above the general college mean of 500; and this group's ISR mean of 93 is well above the national freshman mean of 88. These figures reveal that this is an experi-

ment upon an average or above average college population rather than upon some lowest percentage of the class, as was the case in most of the previous studies.

Matching of groups.—Effectiveness of the remedial reading instruction was measured by the differences between initially matched groups following instruction. Three matching conditions were used: (1) the total remedial group was matched with a group which was not given reading instruction; (2) the remedial group was divided into four groups which were roughly comparable (matched) to each other; and (3) each of the four remedial groups was matched with a group which was not given reading instruction.

The matching criteria in all cases were ISR and GP scores. Probably the most important variables which must be controlled in an experiment of this kind are aptitude, extent of knowledge (previous achievement), motivation, and level of reading ability. The first three of these variables probably are measured best by the components of GP score, since it combines secondary-school standing, aptitude measures, and achievement test measures, and gives appropriate weight to each factor according to its contribution to prediction of academic attainment. Thus GP score involves measures of aptitude, extent of knowledge, and motivation (motivation being measured in part by secondary-school achievement). The final variable, level of reading ability, probably involves several distinct reading skills. The ISR is probably the best single measure now available at the college level for measuring these reading skills.

In selecting control students to be matched with remedial students the latter were first ranked, from lowest to highest, according to GP scores, then all cases having the same predicted score were ranked from lowest to highest on the basis of ISR scores; the same process was followed with the remainder of the freshman class, none of whom had received remedial instruction; in matching, each remedial student was paired with the non-remedial student having the same predicted grade score and the most similar reading test score. This matching resulted in a perfect matching on the basis of GP score between each of the four groups and its control, and also between the total remedial group and its control group. No ISR difference between any group and its control was large enough to be significant, although

the near significance of the difference between the total remedial group and its control (critical ratio—2.81) makes it probable that the control group was superior to the remedial group in reading ability.

When the original one hundred twenty remedial reading students were divided into four groups, no attempt was made to match them precisely with each other. Since it could be assumed that some students would drop out or attend infrequently, it did not seem advisable to do more than to ascertain that the median and the quartiles of the groups were approximately equal initially. By the tenth period, when the ISR retest was made, ten students had been disqualified; and at the end of the course, when the effect of the instruction upon grades was studied, twenty-two had been disqualified. The four groups were first compared when only the one hundred ten students who attended for ten periods were included; then they were similarly compared when only the ninety-eight students who attended throughout were included. If the common practice is followed of assuming a mean difference to be significant if it is equal to at least three times its standard error, then with but one exception no mean difference between any two groups on either criterion was great enough to be called a reliable difference; the significant exception was a mean difference of 1.54 in GP score in favor of Group A over Group B. However, no conclusion is drawn later which this difference might have weakened; the main comparisons which have been made are based upon the more precise matching of remedial students with controls. Allowing the one exception, it may be assumed that there was not an initial significant difference between the groups with reference to the criteria involved.

Plan of course.—It was decided that the training period should continue through eight weeks—two one-hour sessions a week. This decision also was an arbitrary one. However, evidence is available showing that improvement in reading ability has been observed in groups with training periods varying from a week[13] to a year in length.

The sixteen periods were utilized as follows in chronological order:

a) Three preliminary periods. These were spent in having students fill out personal information forms and study problem

inventories, in explaining the purpose of the course and the nature of the reading process, and in having the students observe each other's eye movements.

b) Six periods constituting the first half of the experiment. During this phase of the study each of the four groups followed a different remedial procedure.

c) One retest period. The alternative form of the ISR was given to measure the effects of each of the four remedial procedures.

d) Six periods constituting the last half of the experiment. During this last phase each group spent two periods in each of the other three procedures that had been followed by the other three groups in the first phase of the experiment. For example, if Group A had followed procedure I during the first six periods, then it would follow procedures II, III, and IV in the latter phase, spending two periods in each procedure. Figure 1 pre-

FIGURE 1. Plan showing the order followed by each group in taking up the four remedial procedures, and the time spent on each procedure during the first and second halves of the experiment

Remedial Group	Experimental Plan			
	First Half	Second Half		
	6 Periods	2 Periods	2 Periods	2 Periods
A	I*	IV	III	II
B	II	IV	I	III
C	III	IV	I	II
D	IV	III	II	I

* I, II, III, IV—remedial procedures; see text for description.

sents a complete plan showing the order followed by each group in taking up the four procedures, and the time spent in each procedure during the first and second halves of the experiment.

Thus each class followed all four procedures, but spent six periods concentrating upon one procedure and only two periods upon each of the other three procedures; furthermore, each class

concentrated upon a different one of the four procedures during the first phase of the experiment. The reasons for following this particular plan are these: (1) An obligation to try to help the students as much as possible made it necessary to offer training in more than one reading skill; this was done by stressing in each of the four remedial procedures a different skill considered necessary for college study. These skills were intensive reading, rapid but thorough reading, rapid reading, and skimming for main ideas. (2) The stress upon only one procedure by each of the groups during the first six periods, followed by a retest, made possible an evaluation of the effectiveness of each different remedial procedure for improving reading ability. (3) Comparison of differences in final grades between the groups would show whether or not the procedure or skill stressed in one group caused it to earn higher grades than the other groups, thereby indicating which reading skills should be developed if students are to be aided scholastically.

During the first ten minutes of every hour, mimeographed material concerning such subjects as concentration, use of time, use of the dictionary, etc., was distributed and briefly discussed by all classes in the same order. The remaining forty minutes of the period were devoted to the distinct procedure being followed by each class.*

REMEDIAL PROCEDURES

The methods, materials, and apparatus used in each of the four procedures are described in general below. Since a class repeated approximately the same procedure each period while learning a given reading skill, the use made of one hour may be taken as typical of every hour.

Procedure I: Intensive reading

The students were told during the first experimental period that intensive or thorough reading is required when one is studying material such as is found in scientific textbooks, and that it is used when one is reading to solve problems, studying technical material, or evaluating and criticizing an author's

* Dr. Wittenborn and the writer taught the course under the former's supervision, each teaching in alternative periods every group except Group D, which was taught by Dr. Wittenborn alone.

thought. Intensive reading requires the grasping of main ideas, attentiveness to details or supporting facts, evaluation of content, understanding of the meaning of technical or abstruse language, and the ability to remember much of what is read. The training consisted of having the class read a short selection carefully, then without looking back answer ten multiple choice questions on the content. McCall-Crabbs *Standard Test Lessons in Reading*, Book 5,[6] was used in this procedure. The instructor then reviewed the questions with the class, requiring the students to defend their choices, arousing controversy, raising questions, stimulating interest, and doing anything in general which would keep the students motivated and careful while reading. Although a record of the time required by each student to read the selection and answer the questions was kept on individual progress sheets, no effort was made to sacrifice thoroughness for speed. The progress sheets were used as motivational devices, the student entering his errors as well as his time on the sheet for each selection. As many selections were read in a class period as time permitted.

Procedure II: Rapid reading with thorough comprehension

Students were told during the first experimental period that reading involving speed and thorough comprehension is required in the greater part of all college study; it is particularly important in the social sciences, in which large amounts of material must be read and later recalled. It is not used where the material is so complex as to require intensive reading, nor is it required where content need not be recalled, as in recreational reading. Rapid but thorough reading consists of the same comprehension skills used in intensive reading, but since the content is not so complex one must be able to read faster and retain important points over longer reading units. This type of reading is most effective when the material is divided into convenient reading units, hurriedly skimmed first, then read rapidly yet with intention to remember, and finally summarized in important points written down without looking back at the book. (See Bird[1] for a description of this study technique.)

The training consisted of having the class: (1) read a filmed story which was projected on a screen, (2) answer multiple-choice questions concerning the story, then (3) read a prepared selec-

tion, and (4) answer questions on the selection. This cycle was repeated as often as time permitted. The films,* reading selections, and check questions were developed by Dearborn and his associates.[2] Frequently two selections were read, and questions answered, between films. The speed of the projector was gradually increased during showing of each film, and the speed of each film was greater than that of the preceding one. On individual progress sheets students kept a record of the number of words read per minute in each selection; also, the number of errors was recorded in the appropriate column on the progress sheet. In the early part of the course the students were encouraged to concentrate upon speed and not to worry if they made many mistakes; later, when rate had been improved, they were encouraged to maintain the rate but reduce the number of errors. The questions were answered and discussed in class; the instructor took advantage of this discussion to attempt to improve comprehension skills and to increase motivation.

Procedure III: Rapid reading

Students were told during the first experimental period that rapid reading may be used for recreational reading, non-technical supplementary reading, review, and reading for main ideas alone. Assuming adequate intelligence to be present, ability to read rapidly consists largely of efficient mechanical habits and knowledge of an author's outline, paragraph organization, and other comprehension cues. Efficient mechanical habits involve absence of hindrances of word reading, frequent regressions, vocalization, and inability to find the first word in the next line on the return sweep.

The training consisted of the use of the same methods and materials as were used in Procedure II except that check questions were not used. A film was shown, usually two timed selections were read and the times recorded on progress sheets, then the cycle was repeated using other selections and another film. Students were directed to read only as fast as they could comprehend; however, stress was placed not upon comprehension but upon speed. Now and then, after a selection had been

* The Harvard Films for the Improvement of Reading may be obtained from the Harvard Film Service, Biological Laboratories, Harvard University, Cambridge, Massachusetts.

read, check questions were distributed and answered as a means of preventing the students' becoming careless and reading without comprehending.

Procedure IV: Skimming

Students were told during the first experimental session that skimming may be used for gaining a hurried preview of the content, for locating the main ideas, for locating specific information, and for reviewing. Skimming ability consists of knowledge of the methods by which authors outline their works, facility in recognition of an author's signals, and knowledge of types of paragraphs. The skimming process consists of reading carefully such things as main headings, sub-headings, introductory sentences, concluding paragraphs or sentences, and of following the spiral procedure, which consists of starting with the first word on the left side of the page and letting the eyes sweep across and down to the end of the third or fourth line, then across and down to the left as far as the seventh or eighth line, and so on through the page. While spiraling, the reader attends to facts or ideas rather than sentences and uses this device for locating the important sentences which should be read thoroughly.

The training consisted of having the class skim selections of one thousand words as rapidly as possible for main ideas. The instructor then discussed the selection with the students; an effort was made to help the students to recognize the author's outline, principal and subordinate ideas, helpful signals, topic sentences, types of paragraphs, etc. The time spent in skimming each selection was recorded on individual progress sheets. Strang's[12] *Study Type of Reading Exercises* was employed in this procedure. These exercises are well suited for teaching skimming, since they emphasize the methods and signals used in skimming. A good description of instructional point of view and teaching method for this type of skimming may be found in Wittenborn.[14]

RESULTS AND DISCUSSION

The four questions the study attempted to answer may be restated and then discussed in the order given: (1) What is the value of a remedial reading program to improve grades in general?

(2) What is the value of a remedial reading program to improve grades in particular subjects or groups of related subjects? (3) Which students improved scholastically as a result of the remedial instruction? (4) What kind of remedial reading program is valuable for improving grades?

Improvement of grades in general.—While many studies of the effectiveness of remedial reading programs for improving reading ability have been made, there have been few studies of the effects of such programs upon scholastic improvement. Of approximately seventy-five studies reviewed, only nine contained some test of the effects of remedial reading instruction upon grades. Two of these nine investigators[3,4] report no significant improvement in academic standing as a result of the instruction; the remaining seven[5,7,8,9,10,11,14] agree that remedial reading instruction can improve scholastic standing but none are able to draw unequivocal conclusions.

Comparison of the ninety-eight remedial students with their matched controls in average final grade received at the end of the semester during which the training occurred revealed a mean difference of 2.94 grade points in favor of the experimental group. This mean difference is statistically significant, the critical ratio being 3.45. This mean difference is about one-third of the standard deviation of the average final grade of the whole freshman class. Interpreted in another way, the mean increase in grades is the difference between the thirty-fifth and fiftieth percentile of the class. Assuming the two groups were equal in all respects previous to the special instruction given to one group, it is permissible to say that the superiority of the remedial group was the result of the remedial instruction.

Further evidence which supports the assumption that the scholastic superiority was caused by the remedial instruction is to be found in Table I. There it is shown that most of the scholastic superiority lay in verbal courses rather than in quantitative courses. If the average superiority found were due to initial difference in motivation, extent of knowledge, or any other variable, the influence of any of these variables should have been reflected equally in quantitative and verbal subjects. On the other hand, it is to be expected that a remedial reading program would have caused the pattern found because it would benefit subjects in proportion to the amount of reading involved;

in the division of subjects into verbal and quantitative those involving extensive reading were placed in the former.

The evidence which has been presented shows that remedial reading programs can improve scholastic standing and that the procedures used in this experiment were effective in this respect. It does not indicate that any remedial reading program will improve grades; it is possible that some of the programs described in the literature were not only useless, but even harmful to study abilities.

TABLE I.—DIFFERENCES IN AVERAGE VERBAL GRADE AND AVERAGE QUANTITATIVE GRADE BETWEEN THE REMEDIAL STUDENTS AND THEIR MATCHED CONTROLS*

Grade	N	Reading − Control		
		M_{diff}	SD	CR
Average verbal†.....	98	2.36	8.65	2.71
Average quantitative.....	90	1.26	13.00	0.91

* Matching criteria were General Prediction and Iowa Silent Reading Test scores.

† Average verbal grade includes English, Economics, History, Classical Civilization, French, German, and Spanish.

Average quantitative grade includes Mathematics, Biology, Chemistry, Physics, and Engineering Drawing.

Scholastic improvement in particular subjects.—No investigation has been made previously to determine in what subjects or groups of related subjects a remedial reading program is of value. It is quite important that this be known when means of helping students who are experiencing difficulty in particular subjects are being considered.

The present experiment consisted of four remedial procedures, and the investigation sought to determine their effects upon grades in particular subjects. In this section the effects of these four procedures in combination are studied, while in the last section the distinct effects of each of the four procedures will be considered.

The mean difference in grades between the remedial and control groups in English, Mathematics, the Sciences (Physics,

Chemistry, and Biology), the Languages (French, Spanish, and German), and Engineering Drawing were all in favor of the remedial group, but the critical ratio of the difference was not high enough in any case to be significant. Since a significant superiority in average final grade was found, that gain had to be distributed in some pattern among the various courses and provided a reason for believing that an improvement did occur in one or more of the courses, but the techniques of measurement used were not refined enough to reveal the actual improvement. In an attempt to overcome this limitation of measurement the final grades were divided into two rough categories—verbal and quantitative—and an average found for each. The verbal average included English, Economics, History, Classical Civilization, French, German, and Spanish. The quantitative average included Mathematics, Biology, Chemistry, Physics, and Engineering Drawing. Thus each student had, in addition to an average final grade, an average verbal grade and an average quantitative grade. Then the mean difference between the remedial and control groups in each of these two averages was computed. Table I shows these mean differences and their significance. It is evident that the influence of the remedial instruction lay largely in the verbal courses, and the critical ratio is large enough to allow it to be said with reasonable assurance that the difference in favor of the remedial group is probably a true one.

These data indicate that the combination of procedures used in this experiment is of value in improving the reading abilities needed for study in some or all of the subjects in the verbal category, but is of little value in the subjects in the quantitative category. These findings also indicate that it is not permissible to assume that a remedial reading program will improve the reading abilities needed for study in all courses. Further research is needed to determine which procedures, if any, will improve the study skills required for quantitative courses.

Who improved as a result of the remedial instruction?—Knowing which students improve scholastically as a result of reading instruction is of value in planning remedial measures for deficient students or in planning better educational offerings for all students. It makes possible a decision concerning what levels of aptitude can be helped and concerning the probability of

scholastic gain relative to initial reading status or to predicted grade status.

One study[10] has been made on the relation between intelligence and scholastic improvement following reading instruction. Higher grades were received by the students of higher intelligence but the results can be regarded only as suggestive, since a small sample was involved and no test of the significance of grade improvement or difference between groups was made.

In the present study the relation of four variables to grade improvement were investigated; these were: initial reading status, scholastic aptitude, previous achievement, and predicted grade status. Ninety-eight remedial students were studied in this phase of the investigation. The difference in average final grade between a remedial student and his control is used as the measure of grade improvement.

The correlation between scholastic improvement and initial ISR standing was .14 (PE-.07), showing that initially good readers were not found to improve scholastically to a significantly greater extent than the initially poor readers.

The correlation between scholastic improvement and SAT scores was next computed. The relation found was similar to that found for initial reading status; the correlation of .12 (PE-.07) was negligible and not significant for this population. A check on this correlation was made by correlating SAT scores with the difference between a student's GP score and his actual final average. This correlation agreed with the former, being .05 (PE-.07), which also is negligible and not significant for this population. The interpretation to be placed upon these low correlations is that no level of aptitude was established as having improved scholastically more than another in consequence of the reading instruction.

The correlation between grade improvement and secondary-school grades was .00, indicating that all levels of previous achievement were able to benefit from the remedial instruction, no level improving more than another.

In the investigation of the relation of predicted grade status to grade improvement a different procedure was followed. The ninety-eight students, with their matched controls, were divided into two groups, one group being composed of the forty-nine pairs of highest GP scores, the other the forty-nine lowest; then the

mean difference in scholastic gain of the remedial over the control was computed for each group. Table II illustrates these differences and their significance. The group with the lower predicted grades made a mean gain of 3.57 grade points over its control group, or .63 of a point above the mean gain of the combined ninety-eight cases, and 1.25 points above the gain of the group having higher predicted grades. The gain of the lower group is significant, while that of the upper is not. The significance of the mean difference between the upper and lower groups was checked, and the critical ratio of 0.74 shows that the difference between the two groups was not large enough to significantly differentiate them. These data may be interpreted as showing that the group with the lower GP scores did account for the greater part of the total group's improvement but did not make a significantly greater gain than did the group with higher GP scores.

TABLE II.—DIFFERENCES IN AVERAGE FINAL GRADE BETWEEN THE FORTY-NINE REMEDIAL STUDENTS OF HIGHEST GENERAL PREDICTION AND THEIR MATCHED CONTROLS, THE FORTY-NINE LOWEST AND THEIR MATCHED CONTROLS, AND THE DIFFERENCE BETWEEN THESE DIFFERENCES*

Groups Compared (Reading − Control)	Average Final Grade		
	$M_{diff.}$	SD	CR
49 of highest GP	2.32	8.51	1.91
49 of lowest GP	3.57	8.26	3.02
Difference between the mean differences	1.25		0.74

* Matching criteria were General Prediction and Iowa Silent Reading Test scores.

The findings with respect to the four variables reported above indicate that no level of ability was established as having profited more than another with respect to the four variables investigated; these were initial reading ability, scholastic aptitude, secondary-school achievement, and predicted grade status.

However, students of lowest predicted grade status accounted for a large part of the total group's scholastic gain. The findings with respect to these four variables are in agreement with the

TABLE III.—DIFFERENCES IN FINAL GRADES BETWEEN THE FOUR REMEDIAL GROUPS*

Subject	Groups Compared	N	$M_{diff.}$	SD	CR
English	A – B	22	2.27	8.49	1.22
	A – C	21	1.19	9.62	0.55
	A – D	22	−2.13	7.68	1.27
	B – C	21	−1.42	10.70	0.59
	B – D	22	−3.72	4.61	3.72
	C – D	21	−2.71	10.67	1.13
Mathematics	A – B	13	6.53	15.97	1.41
	A – C	14	− .71	16.23	0.15
	A – D	14	1.50	17.46	0.30
	B – C	16	−8.12	10.29	3.06
	B – D	17	−7.58	10.69	2.83
	C – D	17	− .23	10.61	0.08
Sciences†	A – B	18	1.16	15.68	0.30
	A – C	18	−3.00	13.65	0.90
	A – D	17	−6.88	10.86	2.53
	B – C	16	−1.00	12.72	0.30
	B – D	16	−7.00	13.56	2.00
	C – D	15	−5.26	11.09	1.77
Ave. final grade	A – B	24	2.83	8.30	1.63
	A – C	24	.62	8.52	0.35
	A – D	24	−1.04	8.18	0.61
	B – C	24	−2.08	7.92	1.26
	B – D	24	−3.91	7.14	2.62
	C – D	24	−1.66	9.31	0.85

* Matching criteria were General Prediction and Iowa Silent Reading Test scores.

† Biology, Chemistry, and Physics grades combined.

findings of the majority of investigators who have reported on the relation of various variables to reading improvement.

What kind of remedial program is valuable?—In an attempt to better understand what reading abilities were developed and their effects upon grades, the four remedial groups were com-

pared with each other. Group comparisons in final grades are presented in Tables III and IV. In Table III the groups are compared with each other and in Table IV each group is compared with a matched control group. These data reveal that Group D (skimming for main ideas) is always superior to the

TABLE IV.—DIFFERENCES IN FINAL GRADES BETWEEN EACH OF THE FOUR REMEDIAL GROUPS AND MATCHED CONTROLS*

Subject	Groups Compared†	N	$M_{diff.}$	SD	CR
English	$A_r - A_c$	24	1.24	7.53	0.78
	$B_r - B_c$	24	3.95	5.59	3.40
	$C_r - C_c$	22	3.40	9.70	1.61
	$D_r - D_c$	23	5.95	8.08	3.45
Mathematics	$A_r - A_c$	19	6.05	15.01	1.70
	$B_r - B_c$	20	−6.25	14.24	1.91
	$C_r - C_c$	20	4.20	18.58	0.98
	$D_r - D_c$	21	3.14	18.02	0.77
Science	$A_r - A_c$	23	−6.60	15.88	1.95
	$B_r - B_c$	21	−2.95	11.79	1.12
	$C_r - C_c$	20	−1.70	12.30	0.60
	$D_r - D_c$	18	4.22	13.47	1.29
Languages‡	$A_r - A_c$	17	1.11	8.76	0.50
	$B_r - B_c$	17	4.99	16.09	1.24
	$C_r - C_c$	18	6.38	12.97	2.03
	$D_r - D_c$	15	5.06	11.02	1.72
Ave. final grade	$A_r - A_c$	25	2.60	6.88	1.85
	$B_r - B_c$	25	1.84	7.34	1.26
	$C_r - C_c$	24	2.58	10.05	1.23
	$D_r - D_c$	24	3.41	6.95	2.35

* Matching criteria were General Prediction and Iowa Silent Reading Test scores.

† Remedial group minus control group.

‡ French, German, and Spanish grades combined.

other three, but there is no evidence of consistently significant superiority. It seems quite certain that Group D did profit most from the reading instruction. That this was due solely to their being taught to skim for main ideas cannot be claimed because this group was taught throughout by one of the instructors while the other three groups were taught alternately by both instructors.

In order to facilitate better description of the effects of each of the four remedial procedures upon the students' reading abilities, the alternate form of the ISR was given at the end of the first half of the experiment, after each group had undergone six periods of training in the one skill in which it was specializing, and before it had begun training in the other three reading skills. The test, therefore, measures the effects of four different procedures, each of uniform nature, upon four groups of students of initially undifferentiated reading ability and predicted grade status.

Table V presents the average change in standing on the ISR of the four initially comparable groups in the present study after each had been taught by means of a different remedial procedure; the significance of the gains and losses are shown. Without a control group's gains with which to compare the remedial group's gains it is not permissible to attribute the improvements made on subtests 2, 3, and 7 (subtests on which all groups improved to about the same extent) solely to the influence of the remedial instruction. There can be little doubt that the group differences are attributable to the differential instruction.

As Table V indicates, Groups B, C, and D improved significantly on the Rate section of subtest 1. Other significant gains were made by Group C on the Comprehension part of subtest 1, by all groups on 2 (Directed Reading), 3 (Poetry Comprehension), and 7 (Location of Information), and by Group A on subtest 5 (Sentence Meaning). The losses on subtest 6 (Paragraph Comprehension) are not significant, hence no importance may be attached to them. No significant gain was made on subtest 4 (Word Meaning) because no instruction designed to improve vocabulary was given.

The gains on all subtests except the rate test may be accounted for by three possible causes: (1) the instruction may have improved various comprehension skills, (2) it may have improved the students' rate of reading, thereby enabling them to answer a greater number of questions but with no greater accuracy, or (3) there may have been improvement in both rate and comprehension. The answer sheets were analyzed to determine which cause was responsible. Table VI shows the analysis of items for subtests 1 (Comprehension), 2 (Directed Reading), 5 (Sentence Meaning), and 6 (Paragraph Comprehension),—subtests whose results could be analyzed to determine the cause. In the second

TABLE V.—AVERAGE CHANGE IN STANDING ON THE IOWA SILENT READING TEST OF THE FOUR INITIALLY COMPARABLE REMEDIAL GROUPS AFTER EACH HAD BEEN TAUGHT WITH A DIFFERENT REMEDIAL PROCEDURE*

	ISR Subtests†							
	1		2	3	4	5	6	7
	$a - c$	$b - d$						
Group A Intensive reading (N – 24)								
Mean gain‡..	.33	.99	11.54	11.25	−1.04	7.00	−2.08	5.00
SD.....	15.76	14.46	15.58	18.53	13.58	10.94	11.99	7.10
CR.....	0.10	0.30	3.55	2.91	0.36	3.07	0.83	3.37
Group B Rapid reading with thorough comprehension (N – 33)								
Mean gain...	15.36	4.39	13.66	10.48	3.48	4.33	−6.03	5.15
SD.....	9.88	12.36	14.75	16.92	10.08	9.77	13.89	7.16
CR.....	8.82	2.01	5.25	3.50	1.95	2.51	2.41	4.08
Group C Rapid reading (N – 27)								
Mean gain...	16.14	9.44	12.63	13.22	.11	2.18	2.03	4.14
SD.....	14.57	14.92	12.73	12.22	9.85	11.71	10.18	6.78
CR.....	5.64	3.22	5.05	5.50	0.05	0.94	1.01	3.11
Group D Skimming for main ideas (N – 26)								
Mean gain...	11.00	2.07	12.96	9.50	5.15	3.57	−5.07	5.88
SD.....	11.64	11.72	11.16	19.42	11.10	13.37	12.47	7.29
CR.....	4.74	0.88	5.81	2.44	2.31	1.33	2.03	4.05

* Matching criteria were Iowa Silent Reading Test and General Prediction scores.

† Following are the titles of the subtests:

1 ($a - c$) Rate
1 ($b - d$) Comprehension
2 Directed Reading
3 Poetry Comprehension
4 Word Meaning
5 Sentence Meaning
6 Paragraph Comprehension
7 Location of Information

‡ Standard score points.

column, in each case, is given each group's mean increase in percentage of correct answers. Since there was no significant increase or decrease in accuracy, and no trend indicating that larger groups would have produced significant differences, it

TABLE VI.—ANALYSIS OF THE CHANGES ON ISR SUBTESTS 1 ($b - d$), 2, 5, AND 6 GIVEN IN TABLE V, SHOWING EXTENT OF GAIN IN SPEED AND ACCURACY

Group	Subtest*	Increase in Number of Items Attempted from First to Second Test	Increase in Per Cent of Attempted Items Answered Correctly, First to Second Test		
		M	M	SD	CR
A	1 ($b - d$)	1.00	− .19	12.00	0.07
	2	3.80	−2.19	12.00	0.82
	5	3.19	.85	9.07	0.42
	6	− .09	− .90	6.79	0.60
B	1 ($b - d$)	1.75	−1.56	11.05	0.79
	2	3.68	1.81	12.35	0.82
	5	2.75	1.31	10.95	0.67
	6	−3.37	2.18	8.34	1.45
C	1 ($b - d$)	3.14	2.22	10.50	1.08
	2	2.88	2.88	9.95	1.48
	5	.40	− .11	11.20	0.05
	6	.59	.14	6.67	0.11
D	1 ($b - d$)	2.28	−2.60	9.84	1.29
	2	2.92	− .16	11.50	0.07
	5	1.08	.60	11.90	0.25
	6	−2.52	2.76	8.22	1.64

* The following are the titles of the subtests:

1 ($b - d$) Comprehension
2 Directed Reading
5 Sentence Meaning
6 Paragraph Comprehension

must be assumed that whatever improvements occurred resulted from increased speed and not increased accuracy. The increase in speed, however, was achieved without a loss of comprehension; this means that the student now can cover more material in

study with the same degree of accuracy he possessed when reading more slowly, and is able to learn more because his reading range is expanded. This amounts to saying that the instruction produced an increase in speed of comprehension which is to be distinguished from a type of increase in speed of reading that may be achieved at the expense of decreased comprehension. The improvement in grades that was found is to be accounted for by the former type.

In the analysis of group differences in final grades no group appeared significantly superior to the others, but a trend in favor of Group D existed. Inspection of Table V reveals no superiority for Group D that would account for the trend. However, several factors may have been operative to account for the absence of superiority of Group D on the reading test. First, it is quite possible that neither this test nor any of the current reading tests is a good measure of skimming ability of the type taught in this experiment; the need for such a measure is indicated. Secondly, the possibility that the training period was too short to produce differences on the test that might have appeared after additional training could have been a contributing factor. Finally, the particular order in which Group D took up each of the four procedures throughout the course may have been more conducive to learning than any of the other three orders followed, and may have been the cause of the trend in favor of Group D; this would not have come to light on the reading test.

A corollary question arose which should be answered if possible: What are the comparative strengths and weaknesses of each procedure for developing the reading abilities measured by this reading test? In the absence of significant differences between the groups on all subtests, except one which only differentiates one group from the other three, it must be assumed that one procedure is no better or worse than another for developing any of the reading abilities measured by this test. The only exception is that procedure used for Groups B, C, and D are more effective for improving rate than the procedure for Group A—which was to be expected.

The information gained from the ISR retest makes possible a better understanding as to what reading abilities were developed and, consequently, what reading skills were instrumental in improving scholastic standing. The analysis of gains made on the various subtests revealed that all groups improved in speed of

comprehension; such findings suggest that if this reading ability were developed in a reading program it would be valuable to students in study. In general, the differences between groups were less impressive than the similarities, and no support was evident for the trend found in final grade comparisons in favor of Group D; but this might be attributed to the limitations of the ISR as a measure of skimming ability, or to other possible factors which would not have been evident in the ISR retest.

However, it must be remembered that these conclusions are drawn from data on small groups following a relatively short training period. Use of larger groups or a longer training period might change some of the findings.

SUMMARY

1) The freshmen who received remedial reading instruction earned significantly higher final grade averages than did untrained students of equal predicted grade status and slightly higher initial reading status.

2) The combination of procedures used was of value in improving the reading abilities needed for study in verbal type courses and was of little value in quantitative type courses. (See text for qualification of the use of the terms 'verbal' and 'quantitative.')

3) The effect of the remedial instruction upon particular courses could not be determined.

4) It was not established that the remedial reading instruction was scholastically more beneficial to one student than to another on the four variables investigated; these variables were: initial reading ability, scholastic aptitude, secondary-school achievement, and predicted grade status.

5) Although no remedial procedure produced a consistently significant superiority of one group over another in final grades, analysis of the data revealed that Group D (skimming for main ideas) tended to profit most from the reading instruction.

6) Analysis of gains on the ISR subtests revealed that all groups improved in speed of comprehension.

7) In general, the four different procedures produced little difference between groups on the ISR retest. (a) No cause was evident for the trend in favor of Group D found in the final grade comparisons. This might be attributed to the limitations of the test as a measure of skimming ability, to the brevity of the experimental period, or to changes occurring after the test was

given. (b) The remedial procedures tended to be equally effective or ineffective for improving the abilities measured by the ISR.

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A STUDY OF THE PRODUCTION OF PLEASANT AND UNPLEASANT ITEMS AS RELATED TO ADOLESCENT DEVELOPMENT

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Casual observation leads one to believe that adolescents are faced with more personal problems than pre-adolescents, since the adolescent's life expands to include sex-social, vocational and other interest areas which are of less concern to the pre-adolescent. It also seems that some of these emerging problems during adolescence may be more difficult to resolve in our culture than the problems of childhood. For example, subjective reports would lead one to believe that satisfactory sex-social adjustments during adolescence are often extremely difficult to make and that failure to make satisfactory adjustments in this area frequently precipitates feelings of inferiority and insecurity.

Do adolescents actually have more unpleasant experiences in solving their personal problems than pre-adolescents? There is an abundance of theories but a dearth of experimental evidence on which to base an answer to this question.

The present study was conducted to determine the relative number of pleasant and unpleasant items that pre-adolescent, adolescent, and post-adolescent subjects can produce in a free-recall situation. The assumption made here is that if adolescents have more difficult adjustments to make, this state of affairs will be reflected in the relative number of pleasant and unpleasant associates they can recall. If adolescents and post-adolescents recall fewer pleasant and more unpleasant associates than pre-adolescents, additional data are thereby available to support the hypothesis that adolescence is a period of greater subjective unhappiness than pre-adolescence.

The experimental procedure employed in the present study was adapted from the one used by Bousfield[1] in a study of the production of affectively toned items by college students. Bousfield asked different groups of college students to: a) list as many pleasant objects, activities, and situations as possible; and b) to list as many unpleasant objects, activities, and situations as possible. At two-minute intervals during the sixteen-

minute experimental session the subjects were asked to draw a line to mark their progress. Plots of the relationship between average cumulative totals of items and the time devoted to their production conformed quite well to the following modified exponential equation:

$$n = c(1 - e^{-mt})$$

Bousfield's results confirm previous investigators' conclusions that subjects produce more pleasant than unpleasant items in this type of free-recall situation.

EXPERIMENTAL PROCEDURE

Subjects.—All of the sixth-, ninth-, and twelfth-grade boys and girls of two public schools in central New York were employed as subjects. The sex distributions and mean ages of the subjects in each age-group studied are presented in Table I. Since

TABLE I.—MEAN AGES OF SUBJECTS IN PLEASANT AND UNPLEASANT RECALL GROUPS

Grade Placement	Pleasant Recall Groups			Unpleasant Recall Groups		
	Number of Subjects		Mean CA	Number of Subjects		Mean CA
	Boys	Girls		Boys	Girls	
Sixth	41	46	11.7	49	39	11.6
Ninth	51	46	14.4	56	61	14.7
Twelfth	36	64	17.2	47	48	17.3

various studies report that girls reach pubescence at about thirteen to thirteen and one-half years of age and boys about two years later, it may be assumed that these sixth-, ninth-, and twelfth-grade youth are fairly representative of a general population of pre-adolescents, adolescents, and post-adolescents, respectively.

Instructions.—The subjects were supplied with a pencil and a sheet of 8½″ × 11″ paper. Each subject was then asked to

write his name, grade, and age at the top of the sheet of paper. When this had been completed the following instructions were given:

"This experiment is being conducted in order to find out something about a certain type of thinking. It will consist of a problem similar to the following: I might ask you to write all the names of animals you could think of, and you might write horse, rabbit, lion, and so on. You are not being asked actually to do this, but if you were, you would proceed by writing the names of animals in a column at the left of your sheet of paper. At intervals I would say, 'Draw a line.' On hearing this signal you would draw a horizontal line below the last name you had written and then continue writing the names of more animals. [Experimenter illustrates procedure to be followed on blackboard.] If you had thought of no new names since the last instruction, 'Draw a line,' you would draw another line anyway. [Experimenter again illustrates on blackboard.] You are to begin writing as soon as I tell you what kind of things you are to write. Are there any questions about what you are to do?"

The experimenter answered all questions about the procedure. He then gave either of the following instructions: a) "List as many pleasant objects, activities, and situations as you can"; b) "List as many unpleasant objects, activities, and situations as you can." As soon as the experimenter had given the instruction sentence, he started a stop watch. At intervals of two minutes the experimenter gave the signal, 'Draw a line.' The experiment was conducted for a twenty-minute period, providing ten two-minute intervals of writing.

None of the subjects served in both the pleasant and unpleasant experimental groups, as the data of the second writing session would have been subject to practice effects.

RESULTS

The results for the three 'pleasant' recall groups are presented in Table II and the results for the three groups who were asked to recall 'unpleasant' items are presented in Table III. Within these tables are shown the means of cumulative totals of items written after the specified intervals and the standard deviations of the distributions of cumulative totals. For example, the sixth-grade subjects who were asked to write pleasant associates

produced an average of 10.1 items after two minutes and an average of 18.8 after four minutes. The standard deviations of the distributions from which these means were computed are 3.5 and 6.2, respectively.

TABLE II.—CUMULATIVE DATA OF ITEMS WRITTEN IN RESPONSE TO INSTRUCTIONS TO LIST PLEASANT OBJECTS, ACTIVITIES, AND SITUATIONS

[The figures indicate the mean number of responses after designated intervals and the standard deviations of the distributions from which the means were computed.]

Time in Minutes After Starting Signal	Sixth Grade N = 87		Ninth Grade N = 97		Twelfth Grade N = 100	
	Mean	SD	Mean	SD	Mean	SD
2	10.1	3.5	10.2	3.7	10.1	3.1
4	18.8	6.2	17.4	6.5	17.6	7.0
6	27.1	10.4	23.9	8.3	24.4	9.2
8	34.4	12.3	30.1	11.4	30.7	10.5
10	40.4	14.6	36.1	15.0	36.4	12.7
12	47.8	18.2	40.2	17.3	40.4	13.8
14	54.7	21.6	45.8	19.5	45.3	14.1
16	60.5	25.4	49.6	22.1	49.5	17.2
18	65.9	29.8	53.1	25.6	53.3	19.7
20	70.2	29.5	56.0	28.3	55.6	21.3

The results show large individual differences within each experimental group in the rate of responding. These large individual differences are reflected in the magnitude of the standard deviations. The following are samples of the sequences produced by two twelfth-grade girls. The figures indicate the time intervals.

Pleasant Items.—Subject P. K., twelfth grade, age seventeen years: movies, dances, cake, good books, radio, skating, walking, reading, getting letters, going for rides, Frank Sinatra, bicycling, bed (2); good records, sailors, money, writing letters, dates, swing

music, classical music (4); parties, riding horses, meeting new people, Harry James, moron jokes, drums (6); family, holidays, fairs, picnics, boating, taking pictures, parades, vacations (8); raking leaves, cooking, cokes, skiing, plays (10); cookies, candy, lipstick, service men on leave, flying in an airplane (12); riding roller-coaster, driving a car, playing basketball (14); camping,

TABLE III.—CUMULATIVE DATA OF ITEMS WRITTEN IN RESPONSE TO INSTRUCTIONS TO LIST UNPLEASANT OBJECTS, ACTIVITIES, AND SITUATIONS

[The figures indicate the mean number of responses after designated intervals and the standard deviations of the distributions from which the means were computed.]

Time in Minutes After Starting Signal	Sixth Grade N = 88		Ninth Grade N = 117		Twelfth Grade N = 95	
	Mean	SD	Mean	SD	Mean	SD
2	5.7	3.5	7.1	3.2	7.3	3.9
4	9.7	5.2	12.4	5.7	12.9	6.3
6	13.8	7.1	17.0	8.2	17.1	7.5
8	18.0	9.4	20.8	11.1	21.0	10.4
10	21.7	10.3	25.0	12.3	24.6	12.9
12	24.2	11.2	28.4	14.1	27.9	13.6
14	26.7	11.6	32.0	14.9	31.8	15.5
16	29.8	13.1	34.8	15.4	34.3	17.0
18	32.2	14.2	38.0	16.7	38.2	18.3
20	34.1	13.6	40.4	18.2	40.8	19.5

loafing, watching a growing baby, getting out of school (16); to lie in sun, to get presents (18); teasing somebody, chewing gum, watching new kinds of games (20).

Unpleasant Items.—Subject K. M., twelfth grade, age seventeen years: garbage, mud, flat tire, mice, show-off, tight wads, liars (2); being thrown in lake, bossy people, snobs, dumb teachers, giving speeches (4); sitting still, drowning, being forced to do a thing (6); no movies, no dances, no parties, short boys (8); howling babies, spoiled kids, being queered (10); long reading assign-

ments, not receiving letters, not knowing answers (12); not knowing what to do, having no friends, not being paid (14); hard work, being wrongly accused (16); getting cold, not getting new clothes, fakes (18); lousy movies, dead things, teas (20).

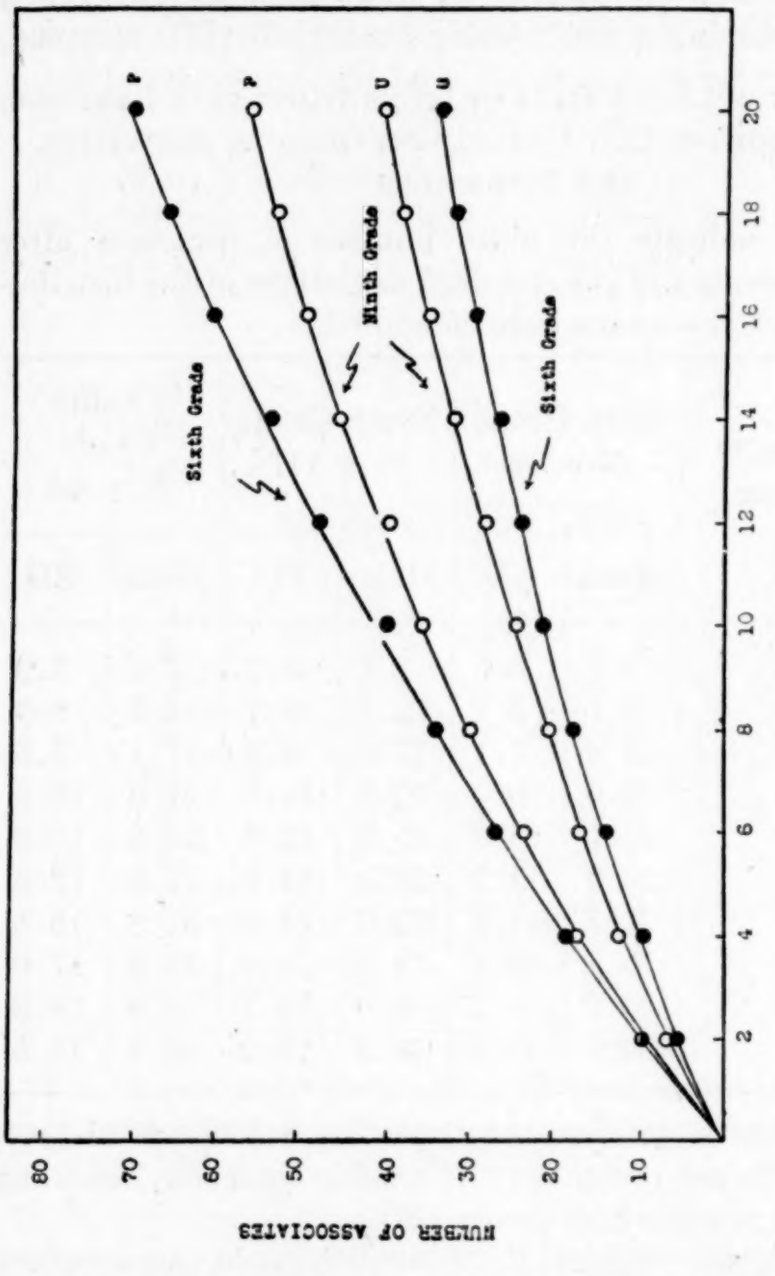

FIG. 1. AVERAGE PLOTS OF SEQUENCES OF ASSOCIATES GIVEN BY SEPARATE SIXTH- AND NINTH-GRADE GROUPS IN RESPONSE TO INSTRUCTIONS TO LIST PLEASANT AND UNPLEASANT ITEMS.

[The plots are based on data presented in Tables II and III. The approximate theoretical constants for the sequences of pleasant items, indicated by *P*, are: Sixth-grade Subjects, $c = 140.3$, $m = .0347$; Ninth-grade Subjects, $c = 85.7$, $m = .0541$. Constants for unpleasant items, indicated by *U*, are: Sixth-grade Subjects, $c = 56.8$, $m = .0460$; Ninth-grade Subjects, $c = 62.8$, $m = .0506$.]

The data for the sixth- and ninth-grade subjects taken from Tables II and III are presented graphically in Fig. 1. The data for the twelfth-grade subjects are not presented in this figure, because they are substantially the same as the data obtained with the ninth-grade boys and girls. The opaque circles and

open circles indicate the means of the cumulative totals for the sixth- and ninth-grade subjects, respectively. The broken lines depict the four theoretical curves computed from the modified exponential equation presented by Bousfield and Sedgewick:[2]

$$n = c(1 - e^{-mt}),$$

in which n = total number of items recalled, c = constant (the horizontal asymptote approached by the function), e = base e of natural logrithms, m = constant, and t = time. The approximate theoretical constants for these functions are given in the legend.* There is a fairly close convergence between the experimental data and the theoretical curves.

In this experiment the sixth-grade subjects produced an appreciably larger number of pleasant items and a smaller number of unpleasant items than either the ninth- or twelfth-grade subjects. The ninth- and twelfth-grade subjects responded to both experimental situations in a highly similar manner.

These results give support to the thesis that pre-adolescents have a greater reservoir of pleasant memories and a smaller number of unpleasant memories available for recall than either adolescents or post-adolescents.† While these results are not conclusive in demonstrating that adolescents have more unpleasant and fewer pleasant psychological experiences than pre-adolescents, they give some support to such a conclusion.

SUMMARY

The present study was conducted to determine the relative number of pleasant and unpleasant items produced in a twenty-

* The techniques used for determining the approximate values of the constants are described by Bousfield and Sedgewick[2] pp. 162–164.

† By differentiating the equation, $n = c(1 - e^{-mt})$ Bousfield[1] (p. 212) shows that the rate of responding is proportional to the remaining items available for recall. From this it may be assumed on the basis of the present data that the pre-adolescents had more pleasant items and fewer unpleasant items available for recall than either the adolescents or post-adolescents. The word 'available' is significant because it represents the reservoir of 'available' items which is being studied in this type of recall situation. It is probable that all of the subjects remembered certain pleasant and unpleasant items which were not available for responses because of attitudes formed by conventions, traditions, etc. It is not possible to determine from the present data whether differential controls of this type were operating within the three experimental groups.

minute free recall situation by different groups of pre-adolescents, adolescents, and post-adolescents. Approximately one-half of the subjects in each of these three groups were asked to list as many pleasant objects, activities, and situations as possible; the remaining subjects in each of the three groups were asked to list as many unpleasant items of this type as possible. All of the subjects were asked to draw a line every two minutes, so that it would be possible to compute cumulative totals and means.

The data for the three developmental groups are presented in tabular form. More pleasant than unpleasant items were produced in each of the developmental groups. The results obtained for both pleasant and unpleasant recall with the ninth-grade group are substantially the same as the results obtained with the twelfth-grade group.

The data for the pre-adolescents (sixth-grade subjects) and the adolescents (ninth-grade subjects) are presented in graphic form. Theoretical curves computed from the modified exponential equation, $n = c(1 - e^{-mt})$, are shown for the four groups of data.

In this experiment the pre-adolescents produced an appreciably larger number of pleasant associates and a smaller number of unpleasant associates than either the adolescent or post-adolescent subjects. This finding is interpreted as giving some support to the thesis that adolescents and post-adolescents have more unpleasant and fewer pleasant psychological experiences in our culture than pre-adolescents.

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PERSONALITY ADJUSTMENTS OF CHILDREN BELONGING TO TWO MINORITY GROUPS

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Many scientific studies have been made and much has been written concerning the characteristics of the American Negro. Recently a summary has been made of some of this literature.[5] As a member of a minority group the Negro finds himself faced with two different cultures, that of his white neighbors and that of his own group. The effect of such conflict is well expressed by one writer[1] who says, in speaking of the Negro: " . . . it appears certain that race attitudes and their effects upon personality become far more strongly developed as they go through adolescence to adulthood and parenthood; as they grow older, that is, they learn that their status and opportunity for full human participation in this civilization are vitally affected in a great many points by racial prestige or racial stigmas."

Although the Negro is the best known minority group in America, there are other groups set apart from the general population by appearance and social customs. One such minority group is composed of members of the Amish religious sect. The members of this group are readily distinguished from their neighbors. The men wear broad-rimmed black hats and dark suits of distinctive cut. They fasten their clothing with hooks and eyes rather than with buttons. They wear beards. The women wear distinctive bonnets and long plain colored dresses. The garb of the children is similar to that of their parents.

Amish people are faced with two cultural patterns, their own and that of their non-Amish neighbors. They drive horses and buggies instead of automobiles, they do not attend movies, they do not have electric lights in their homes, and they do not have telephones or radios. They tend to live to themselves with their own marriage, funeral, and other customs. They do not believe in education beyond the eighth grade. They are conscientious objectors to war. Practically all Amish men are farmers. The writer has found some evidence of differences in personality adjustment and in specific attitudes between children belonging to this sect and other children from the same communities.[2,3,4]

The purpose of the present study has been to compare the personality adjustments of a group of young Negro and a group of young Amish children with a control group of non-Amish white children. Greater differences might have been found had older children been used as subjects, but it was desired to learn what effect belonging to minority groups had on the personalities of young children. Knowledge of any maladjustments resulting from such membership could thus serve as a basis for special attention and assistance by teachers during those years when such help would be most effective.

GENERAL TECHNIQUES OF THE RESEARCH

Subjects for the present study were children in the second and third grades of public schools. Part of the children were attending rural (including small town) schools in northeastern Indiana, others were pupils in schools of a nearby city, South Bend, Indiana. A total of fifteen teachers in thirteen rural schools and seven teachers in three city schools coöperated in the study.

The distribution of subjects was as follows:

	Number		Number
Amish group		Control group	
Boys	51	Rural boys	44
Girls	50	Urban boys	46
		Rural girls	32
Total Amish	101	Urban girls	46
Negro group			
Boys	51	Total control	168
Girls	56		
Total Negro	107		
Total subjects			376

Of the total group one hundred ninety-two were boys and one hundred eighty-four were girls.

It should be said that religious belief in itself was not the criterion for designating certain children as belonging to the Amish minority group. As a matter of fact twelve boys and five girls in the control group were members of a branch of the Amish sect, but members of this branch do not wear the distinctive garb, they drive cars, they have electricity in their

homes, and in other ways conform to the general pattern of life of their non-Amish neighbors.

In the rural schools all children in second and third grades were used as subjects except in one school where a subgroup containing both Amish and non-Amish children was used. In the urban schools whenever a room was used all children in that room served as subjects except in one case where a subgroup containing both Negro and white children was used.

A few children failed to indicate the date of their birth, but for those for whom ages could be computed mean ages in years of the various groups were as follows: Amish boys 9.45, Amish girls 9.24, Negro boys 8.84, Negro girls 8.63, rural control boys 8.59, rural control girls 8.38, urban control boys 8.42, urban control girls 8.05.

All subjects were given the *California Test of Personality—Primary, Form A*. This inventory was selected not only because it is definitely designed for children in the primary grades, but because it permits analysis of the total score into two major factors—self-adjustment and social adjustment. Furthermore, within each of these major divisions there are six subdivisions permitting a still more detailed analysis. The inventory was administered to the children in the spring of 1945.

In studying the relationship between personality adjustment and membership in the Amish, Negro, and control groups three steps were taken: (1) comparison of the total and two major subscores on the inventory, (2) comparison of the scores on each of the twelve subsections of the inventory, (3) comparison of answers to some of the specific questions on the inventory. Such an analysis was made in the hopes that the data would be helpful to teachers working with children belonging to the minority groups.

The *California Test of Personality—Primary, Form A* consists of ninety-six questions to be answered by 'Yes' or 'No'. The first forty-eight questions are designed to give a measure of feelings of personal security. The last forty-eight questions are designed to give a measure of feelings of social security. The total score is said to show 'life adjustment,' that is, the balance between self and social adjustment. Answers are scored by a key. In interpreting all data which follow one must note that the higher the score the more desirable is the adjustment.

A check was made in order to determine the extent to which the self and social adjustment sections of the inventory measured different aspects of personality. This was done by correlating scores on the two sections of the inventory for various groups of subjects.

Number of Subjects	Group	*r*	SE
101	Amish	+.55	.07
168	Control	+.43	.06
107	Negro	+.48	.07
184	Girls	+.43	.06
192	Boys	+.49	.05

All of these coefficients of correlation for scores on the two sections of the inventory are lower than the coefficient of .66 reported by the authors of the inventory. The coefficients are sufficiently low to indicate that, although there is some overlapping, the two sections of the inventory measure different aspects of personality.

In securing data on the control group, urban white boys and girls and rural non-Amish white boys and girls were first treated separately, but in order to reduce the tabular material the four subgroups are combined into two control groups, boys and girls, in much of the detailed data in this report. That for some purposes such a combination into two control groups was justified is indicated by the following comparisons.

Adjustment	Sex	Mean Score; Urban White Children	Mean Score; Rural Non-Amish White Children	D/SE Diff.
Self	Boys	33.41	32.23	0.99
	Girls	33.41	32.44	0.85
Social	Boys	37.46	37.91	0.34
	Girls	41.37	40.31	1.12
Total	Boys	70.80	70.24	0.26
	Girls	74.85	73.06	0.99

COMPARISON OF SELF, SOCIAL, AND TOTAL ADJUSTMENT SCORES

Data on the self, social, and total mean scores for Amish, control, and Negro boys are given in Table I. It will be noted

that none of the differences are statistically significant. However, for self adjustment there is a suggestion that the boys of the control group show more desirable adjustment than either the Amish or Negro boys, and that the control boys show more desirable total adjustment than the Negro boys. Also, it is of interest to note that the mean score of Amish boys on social adjustment is higher than the mean scores of either the control or Negro boys. Possibly this higher social score of the Amish boys is to be accounted for by the fact that the Amish people tend to form a closely knit social group of their own.

TABLE I.—DISTRIBUTION OF SELF, SOCIAL, AND TOTAL ADJUSTMENT SCORES OF AMISH, CONTROL, AND NEGRO BOYS

	Social Group	Mean Score	SE Sample	SE Mean	Diff. in Means	SE Diff.	D/SE Diff.
Self Adjustment	Amish	31.42	5.36	0.76			
					1.41	0.96	1.47
	Control	32.83	5.60	0.59			
					1.64	0.95	1.73
	Negro	31.19	5.30	0.75			
Social Adjustment	Amish	39.15	4.42	0.63			
					1.49	0.89	1.67
	Control	37.66	5.98	0.63			
					0.63	1.06	0.59
	Negro	37.03	6.05	0.86			
Total Adjustment	Amish	70.68	9.09	1.29			
					0.16	1.67	0.10
	Control	70.52	10.00	1.06			
					1.88	1.76	1.07
	Negro	68.64	9.98	1.41			

Corresponding data on self, social, and total mean scores for Amish, control, and Negro girls are given in Table II. It will be noted that all mean scores for the control group are higher than the corresponding scores for either the Amish or the Negro groups. In self adjustment the critical ratio for the difference between the control and Amish girls is statistically significant. In social adjustment the critical ratio for the difference between the control group and the Negro group is statistically significant.

The difference between the total scores of the control and Amish groups just misses being statistically significant.

TABLE II.—DISTRIBUTION OF SELF, SOCIAL, AND TOTAL ADJUSTMENT SCORES OF AMISH, CONTROL, AND NEGRO GIRLS

	Social Group	Mean Score	SE Sample	SE Mean	Diff. in Means	SE Diff.	D/SE Diff.
Self Adjustment	Amish	30.18	6.38	0.91			
					2.83	1.08	2.62
	Control	33.01	5.05	0.58			
					0.44	0.94	0.47
	Negro	32.57	5.54	0.75			
Social Adjustment	Amish	39.62	4.56	0.65			
					1.32	0.81	1.63
	Control	40.94	4.20	0.48			
					2.37	0.88	2.69
	Negro	38.57	5.48	0.74			
Total Adjustment	Amish	70.34	9.54	1.36			
					3.78	1.63	2.32
	Control	74.12	7.90	0.90			
					2.73	1.56	1.75
	Negro	71.39	9.39	1.27			

In general it may be said that there is some suggestion that membership in a minority group is associated with feelings of personal insecurity, although this statement can only be justified statistically when Amish and control girls are compared. There is some suggestion that membership in a minority group is associated with feelings of social insecurity, although this statement can only be justified statistically when Negro and control girls are compared and does not hold true at all when Amish and control boys are compared. Although not statistically significant there is a suggestion that membership in a minority group is associated with a less satisfactory balance between self and social adjustment than is the case for children belonging to a majority group, but this statement does not hold true when Amish and control boys are compared.

In Tables I and II urban white children and rural non-Amish white children are combined to form the control groups. A com-

parison of Amish and rural non-Amish children and of Negro and urban white children provide some additional data which are of interest. Mean scores of non-Amish rural children and urban white children have been indicated previously. Without giving all the details, it should be said that the critical ratios for differences between Amish and rural non-Amish boys in self, social, and total adjustment are 0.70, 1.15, and 0.23, respectively. The corresponding ratios for Amish and non-Amish rural girls are 1.82, 0.73, and 1.41, respectively. Critical ratios for differences between Negro and urban white boys in self, social, and total adjustment are 2.00, 0.33, and 1.00, respectively. The corresponding figures for Negro and urban white girls are 0.78, 2.86, and 1.99, respectively.

It is of interest to compare the three groups of the present study with the group upon which the authors of the inventory based their percentile norms. In self adjustment the authors indicate a score of 34 for the 50th percentile. It will be noted that all mean scores in the present study are below this 50th percentile score. In social adjustment the authors indicate a score of 36 for the 50th percentile. All mean scores in the present study are above this 50th percentile score. For total adjustment the authors indicate scores of 69 and 70 for the 50th percentile. All mean scores in the present study are within five per cent of the 50th percentile scores except the mean score for control girls which is at the 60th percentile.

From Tables I and II data can be secured for comparing Amish and Negro children. For example, from Table I it is to be seen that Amish boys had a mean score in self adjustment of 31.42 and that Negro boys had a mean score of 31.19. Standard errors of the samples and of the means for these two groups can be read directly from Table I. The difference between these self adjustment scores of Amish and Negro boys is 0.23, the standard error of the difference is 1.07, and the ratio of difference to standard error of the difference is 0.21. The difference between social adjustment scores for Amish and Negro boys is 2.12, the standard error of the difference is 1.07, and the critical ratio is 1.98. The difference between total adjustment scores is 2.04, the standard error of the difference is 1.91, and the critical ratio is 1.07.

Amish and Negro girls can be compared by studying Table II.

For example, it will be seen that the mean self adjustment score for Amish girls is 30.18 and for Negro girls the mean score is 32.57. Standard errors for the samples and means can be read directly from the table. The difference between these mean scores is 2.39, the standard error of this difference is 1.18, and the critical ratio is 2.03. The difference between social adjustment scores for Amish and Negro girls is 1.05, the standard error of the difference is 0.99, and the critical ratio is 1.06. The difference in means on total adjustment is 1.05, standard error of the difference 1.86, and critical ratio 0.56.

It will be noted that for a number of measurements differences between the two minority groups are less significant than differences between each of these groups and the control groups, although for some measurements the opposite is true.

COMPARISON OF SCORES ON EACH OF TWELVE SUBSECTIONS

Mean scores of Amish, control, and Negro children on each of the six subsections comprising self adjustment and on each of the six subsections comprising social adjustment are given in Table III.

It is of interest to compare the scores in Table III with the scores made by the group upon which the authors of the inventory based their percentile norms. According to the authors, scores of 5.00 in self-reliance, sense of personal freedom, and freedom from nervous symptoms are to be considered as the 50th percentile. Scores of approximately 5.50 in sense of personal worth, feeling of belonging, and freedom from withdrawing tendencies are to be considered as the 50th percentile. In the section on social adjustment, scores of 6.00 are considered to stand at the 50th percentile for all subsections.

For the present study differences between the Amish and control groups and between the Negro and control groups were computed, but only those differences having a critical ratio of 2.33 or greater will be reported here.

Significant differences between Amish and control boys were found in two subsections—sense of personal freedom and community relations—control boys having the higher score in the first and Amish boys having the higher score in the second. The critical ratios for these differences are 2.91 and 3.38, respectively. When Amish and rural non-Amish boys only were compared,

the critical ratio was found to be 3.14 for sense of personal freedom, the non-Amish boys having the higher score of 6.02. In community relations rural non-Amish boys had a mean score of 6.84, a difference of only 0.24 between their score and that of Amish boys, the critical ratio for the difference being only 0.86. However, urban white boys had a mean score in community relations of 5.72, so it is to be seen that the difference between

TABLE III.—MEAN SCORES OF AMISH, CONTROL, AND NEGRO CHILDREN ON EACH OF TWELVE SUBSECTIONS OF THE CALIFORNIA TEST OF PERSONALITY—PRIMARY, FORM A

		Boys			Girls		
		Amish	Control	Negro	Amish	Control	Negro
Self Adjustment	Self-reliance	5.45	5.54	5.04	5.12	5.45	5.27
	Sense of personal worth	5.24	5.63	6.08	4.82	6.17	6.30
	Sense of personal freedom	5.12	5.87	5.25	6.06	5.94	6.04
	Feeling of belonging	5.14	5.62	5.78	5.06	6.18	6.02
	Freedom from withdrawing tendencies	5.18	5.24	4.78	4.44	5.18	4.77
	Freedom from nervous symptoms	5.33	5.04	4.31	4.66	4.40	4.46
Social Adjustment	Social standards	7.04	6.96	6.55	6.88	7.08	6.61
	Social skills	6.06	5.93	6.10	6.36	6.51	6.38
	Freedom from antisocial tendencies	6.37	6.19	5.65	6.30	6.65	6.00
	Family relations	6.08	6.10	6.59	6.24	6.77	6.80
	School relations	6.71	6.38	6.45	7.14	7.14	6.57
	Community relations	7.08	6.27	6.16	6.84	6.83	6.18

the Amish boys and control boys is to be understood in terms of a comparison with urban boys rather than with rural boys.

Significant differences between Amish and control girls were found in two subsections—sense of personal worth and feeling of belonging—control girls having the higher scores in both cases. The critical ratios for these differences are 4.38 and 4.91, respectively. When Amish and rural non-Amish girls only were compared, the critical ratio for sense of personal worth

was found to be 2.08, the non-Amish girls having a mean score of 5.69. When Amish and rural non-Amish girls only were compared, the critical ratio for feeling of belonging was 3.48, the non-Amish girls having the higher score of 6.00.

In only one subsection—freedom from nervous symptoms—was there a significant difference between the scores of Negro and control boys, the latter having the higher score. The critical ratio for this difference is 2.55. When Negro and urban white boys only were compared the critical ratio was 1.66, white boys having the higher score of 4.89.

Significant differences between Negro and control girls were found in two subsections—freedom from anti-social tendencies and community relations—control girls having the higher scores in both cases. The critical ratios are 2.51 and 2.73, respectively. When Negro and urban white girls only were compared on freedom from anti-social tendencies the critical ratio was 2.79, urban white girls having the higher score of 6.78. When Negro and urban white girls only were compared on community relations the critical ratio was 2.53, urban white girls having the higher score of 6.83.

In addition to the significant differences between the minority groups and control groups as indicated above, there was found to be a significant difference between Negro and urban white boys in freedom from anti-social tendencies. As is indicated in Table III, the Negro boys had a mean score of 5.65. The urban white boys had a mean score of 6.54. The difference of 0.89 has a critical ratio of 2.70. It should be added that there was only a difference of 0.31 between Amish and rural non-Amish boys in this subsection.

ANSWERS TO SPECIFIC QUESTIONS ON THE INVENTORY

In order to carry the analysis of differences between minority and majority groups still further, the percentages of children giving the adjusted answers to various questions were computed. These percentages were not computed for all of the ninety-six questions, but such computations were made for all subsections in which the critical ratio for the difference between a minority and a control group was 2.00 or higher.

Questions differentiating significantly between the minority groups and the control groups are listed below, comparison being made by sex. In each list the questions are arranged in order

Questions	Per Cent of Adjusted Answers		D/SE Diff.
	Amish	Control	
(1) Are there some mean boys and girls who live near you? (No).....	88.2	65.6	3.32
(2) Are there people near your home who are not nice? (No).....	92.2	73.3	3.13
(3) May you do most of the things you like? (Yes).....	39.2	63.3	2.84

of decreasing magnitude of the critical ratio. The adjusted answers, as given by the authors of the inventory, are indicated in parentheses following each question. In some cases the differences between the minority groups and the control groups are to be understood in terms of differences other than those resulting merely from membership in such groups. In those cases further details are given.

Amish and control boys compared.—There are three questions on the inventory for which there were significant differences between the answers given by Amish and by control boys.

The difference in the answers to the first question is to be understood in terms of the difference between urban and rural life, rather than in terms of the difference between membership in a minority and in a majority group. Of the rural non-Amish boys, 84.1 per cent gave the adjusted answer whereas only 47.8 per cent of the urban white boys gave this answer. The critical ratio for the difference between urban white boys and Amish boys is 4.64. The difference in the second question is to be understood in the same way. Of the rural non-Amish boys, 93.2 per cent gave the adjusted answer but only 54.3 per cent of the urban white boys gave this answer. The critical ratio for the difference between Amish and urban white boys is 4.61. When Amish and rural non-Amish boys were compared for the third question the critical ratio was 2.72, the percentage of non-Amish boys giving the adjusted answer being 65.9 per cent. The difference between the answers of Amish and all

other boys on this question is probably to be accounted for in terms of the strict discipline imposed by Amish parents.

Amish and control girls compared.—There are nine questions for which there were significant differences between the answers given by Amish and by control girls.

Question	Per Cent of Adjusted Answers		D/SE Diff.*
	Amish	Control	
(1) Do lots of children have more fun at home than you do? (No)	34.0	71.9	4.51
(2) Are the boys and girls mean to you? (No)	68.0	93.6	3.59
(3) Are you as big and strong as most of the boys and girls? (Yes)	40.0	68.0	3.22
(4) Are most of the children smarter than you? (No)	28.0	55.1	3.19
(5) Would you rather watch others than to play yourself? (No)	38.0	65.4	3.13
(6) Are most of the boys and girls mean to you? (No)	68.0	91.0	3.12
(7) Do you have nicer folks than most other children? (Yes)	20.0	46.2	2.95
(8) Do your folks think that you are as good as they are? (Yes)	52.0	74.4	2.58
(9) Can you do things as well as other children? (Yes)	58.0	78.2	2.40

For the first of the questions listed, 59.4 per cent of the rural non-Amish girls gave the adjusted answer, the critical ratio for the difference between Amish and rural non-Amish girls being 2.31. A greater difference was found when Amish and urban white girls were compared. Of the urban white girls 80.4 per cent gave the adjusted answer, the critical ratio for the difference between Amish and urban white girls being 5.21.

For the second question 87.5 per cent of the rural non-Amish girls gave the adjusted answer and the critical ratio for the difference between Amish and rural non-Amish girls is 2.24. On the other hand, 97.8 per cent of the urban white girls gave the adjusted answer and the critical ratio for the difference between Amish and these girls is 4.30. The sixth question, taken from another subsection of the inventory, is similar to the second question except for the addition of the word 'most.' For this question 93.8 per cent of the rural non-Amish girls gave the adjusted answer and 89.1 per cent of the urban white girls gave the adjusted answer. In the replies to these two questions we seem to have some evidence of a feeling of persecution on the part of the minority group children.

For the fifth question, seventy-five per cent of the rural non-Amish girls gave the adjusted answer, the critical ratio for the difference between Amish and such girls being 3.59. Possibly a feeling of being different causes the Amish girls to prefer to watch others play rather than playing themselves. It is of interest to note that only fifty per cent of the urban white girls gave the adjusted answer, the critical ratio for the difference between Amish and these girls being only 1.19.

There might be some debate concerning the adjusted answer of 'Yes' for the seventh question. On this question thirty-two per cent of the rural non-Amish girls and 60.9 per cent of the urban white girls gave the adjusted answer as that answer is indicated by the authors of the inventory. The critical ratio for the difference between urban white and Amish girls is 4.18. The small percentage of Amish girls expressing the opinion that their folks are nicer than those of most children may well grow out of the feeling that their parents are peculiar because of differences in dress and social customs.

The reputed severity of Amish discipline may account for the differences in answers to the eighth question, but the greater difference between rural and urban children is of special interest. Of the rural non-Amish girls, 65.6 per cent gave the adjusted answer, the critical ratio between these girls and the Amish girls being 1.24. On the other hand, 80.4 per cent of the urban white girls gave the adjusted answer, the critical ratio for the difference between these girls and Amish girls being 3.08.

There was but very little difference between the replies of

Amish and rural non-Amish girls on the ninth question, the non-Amish girls having given the adjusted answer in 59.4 per cent of the cases. However, 91.3 per cent of the urban white girls gave the adjusted answer, the critical ratio for the difference between these girls and Amish girls being 4.08.

Although the difference between Amish and all control girls was not significant for "Do you need to have more friends?", the difference between Amish and rural non-Amish girls was significant. Of the Amish girls, sixty per cent gave the adjusted answer of 'No' whereas 84.4 per cent of the rural non-Amish girls gave this answer. The critical ratio for the difference is 2.57.

For the question "Do you feel that people don't like you?" the difference between Amish and all control girls was not significant, but when Amish and rural non-Amish girls only were compared the difference was significant. Of the Amish girls, seventy-two per cent gave the adjusted answer of 'No' whereas 93.8 per cent of the rural non-Amish girls gave this answer. The critical ratio for the difference is 2.87.

Negro and control boys compared.—There are four questions for which there were significant differences between the answers given by Negro and by control boys.

Questions	Per Cent of Adjusted Answers		D/SE Diff.
	Negro	Control	
(1) Do you have too little time to play? (No)	29.4	55.5	3.14
(2) Are you sick much of the time? (No)	64.7	86.7	2.89
(3) Are you punished for many things you do? (No)	29.4	50.0	2.48
(4) Do you often wake up because of bad dreams? (No)	31.4	52.2	2.48

For the first two of these questions the comparison between Negro and control boys is better understood when the control group is broken down into urban white boys and rural non-

Amish boys. For the first question 45.7 per cent of the urban white boys gave the adjusted answer, the critical ratio between these boys and Negro boys being 1.68. Of the rural non-Amish boys, 65.9 per cent gave the adjusted answer, the critical ratio between these boys and Negro boys being 3.80. It is of special interest to note that a greater percentage of urban boys, both Negro and white, than of rural non-Amish boys feel that they have too little time to play. Of the Amish boys, 43.1 per cent gave the adjusted answer of 'No.'

For the second question, 76.1 per cent of the urban white boys gave the adjusted answer, the critical ratio for the difference between these boys and Negro boys being 1.24. Of the rural non-Amish boys, 97.7 per cent gave the adjusted answer, the critical ratio for the difference between these boys and Negro boys being 4.71.

Although the difference between the Negro and all control boys was not significant for—"Are people often so bad that you have to be mean to them?", there was a significant difference between the replies of urban white boys and Negro boys. Of the urban white boys 82.6 per cent gave the adjusted answer of 'No' but only 58.8 per cent of the Negro boys gave this answer. The critical ratio for this difference is 2.70.

Also, there was a significant difference for the question—"Do you often tell the other children that you won't do what they ask?"—when Negro and urban white boys were compared. Of the urban white boys, 84.8 per cent gave the adjusted answer of 'No' but only 60.8 per cent of the Negro boys gave this answer. The critical ratio for the difference is 2.79.

Negro and control girls compared.—There are three questions for which there were significant differences between the answers given by Negro and by control girls.

Negro girls are more poorly adjusted to the school situation, as indicated by their answers to the first question, than are either rural non-Amish girls or urban white girls, although the greater contrast is with urban white girls. Of the rural non-Amish girls, 90.6 per cent gave the adjusted answer, the critical ratio for the difference between these girls and the Negro girls being 1.82. Of the urban white girls 97.8 per cent gave the adjusted answer, the critical ratio for the difference between them and Negro girls being 3.50.

Question	Per Cent of Adjusted Answers		D/SE Diff.
	Negro	Control	
(1) Are things at school so bad that you try to stay away? (No).....	76.8	94.9	2.95
(2) Are there people near your home who are not nice? (No).....	57.1	80.8	2.94
(3) Are there many bad children in your school? (No).....	53.6	74.4	2.49

Urban as contrasted to rural environment may account for some of the differences in answers to the second question. Of the urban white girls, 76.1 per cent gave the adjusted answer, the critical ratio between these girls and the Negro girls being 2.09. Of the rural non-Amish girls 87.5 per cent gave the adjusted answer, the critical ratio between them and the Negro girls being 3.49.

The difference between urban and rural environments seems to be reflected in the third question, also. Of the urban white girls, 67.4 per cent gave the adjusted answer, the critical ratio between these girls and Negro girls being 1.44. Of the rural non-Amish girls, 84.4 per cent gave the adjusted answer, the critical ratio for the difference between these girls and the Negro girls being 3.31.

SUMMARY

In order to assist the teacher in guiding young children belonging to minority groups, measurements of both self and social adjustments have been made for Amish, Negro, and control groups of children. The children were in the second and third grades of school. Although many of the differences between the minority social groups and the majority control groups have not been statistically significant, such differences as have been found may well serve to stimulate the teacher to further study of individuals and groups.

In general it has been found that children of the control groups show better personality adjustment than children of the Amish and Negro groups in self, social, and total adjustment. However, there is the possible exception that Amish boys may be better adjusted within their social group than are either Negro or control boys within their groups. Especially is there evidence that control girls show better self and total adjustments than do Amish girls and that control girls show better social adjustment than do Negro girls.

No detailed personality patterns were found to be characteristic of children belonging to both minority groups. Probably such differences as were found are to be understood primarily in terms of the specific environments in which the children live rather than merely in terms of membership in a minority group. Also, there were sex differences within each minority group.

Amish boys tend to be less well adjusted than control boys in sense of personal freedom, but they are better adjusted than control boys in community relations, especially as compared with urban boys. Amish girls tend to be less well adjusted than control girls in sense of personal worth and feeling of belonging. Negro boys tend to show more nervous symptoms than do control boys and as compared to urban white boys they are more anti-social. Negro girls tend to be more anti-social and to have less satisfactory community relations than do control girls.

It has been found that children belonging to the Amish and Negro minority groups tend to differ from children belonging to the control groups with respect to specific questions as well as in terms of total scores and subscores. Both boys and girls of the Amish group, as compared with children of the control groups, tend to feel that they are persecuted, that is, that other children are mean to them. Also, they feel that they do not have as much fun and cannot do things they would like to do. Amish boys tend to feel that their neighbors are not 'nice.' Amish girls tend to think that they are not as 'smart' as other children, that other children are stronger than they are, that other children can do things better than they can, and they prefer to watch other children play rather than playing themselves. Also, Amish girls tend to believe that their parents do not think well of them and that their parents are not necessarily nicer than the parents of other children. As compared with

their girl classmates, fewer Amish girls feel that they have enough friends and fewer of them feel that people like them.

Negro boys, as compared to control boys, tend to feel that they have too little time to play and that they are punished for many things. Also, they tend, more than control boys, to feel that they are not in good health and that they are disturbed by bad dreams. As compared with urban white boys, Negro boys tend to feel that other people are so bad that they have to be mean to them and they tend to rebel at doing what other children ask them to do. As compared to control girls, Negro girls seem to be less well adjusted to the school situation, including the belief that there are many bad children in their schools. Also, they tend to feel that there are people near their homes who are not 'nice.'

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RELATION OF MARKS IN COLLEGE COURSES TO THE INTERESTINGNESS, VALUE, AND DIFFICULTY OF THE COURSES*

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The problem of this experiment was to determine the extent to which the judgment that a student makes concerning the interestingness of a college course is related to his judgments concerning its value and its difficulty, and also the extent to which these are related to the mark that he receives at the end of the course.

HISTORY OF THE PROBLEM

Inasmuch as the method employed for measuring Interest, Value, and Difficulty was that of equal-appearing intervals, the work of Thurstone,[1] who was responsible for the technique, should be cited. Thurstone applied this technique to the measurement of a number of social attitudes. The first attempt to use the method for determining attitudes of students toward school subjects seems to have been that of Remmers and Silance,[2] who dealt with high-school courses and who concerned themselves only with a general attitude toward the subject. Finally, Sartain and Waring,[3] employing this method, devised two scales for measuring attitudes toward college courses, one for the interestingness of the course and the other for its value. In this study Value and Interest were found to be fairly highly correlated (r, .702).

STANDARDIZATION OF THE DIFFICULTY SCALE

As mentioned above, the Interest and Value scales have already been described.[4] They consist of twenty-two and

* The writer wishes to express his appreciation to Miss Alice Mae Roberts, who did a great deal of the work required to standardize the Difficulty scale.

[1] Thurstone, L. L., "The Measurement of Social Attitudes," *Journal of Abnormal and Social Psychology*, 1931–32, 26, 249–269.

[2] Remmers, H. H., and Silance, E. B., "Generalized Attitude Scales," *Journal of Social Psychology*, 1934, 5, 298–312.

[3] Sartain, A. Q., and Waring, E. Graham, "Interest in and Value of College Courses," *Journal of Applied Psychology*, 1944, 28, 520–526.

[4] Sartain and Waring, *op. cit.*, 520–522.

twenty-one statements, respectively, the statements having been chosen so that their scale values would be approximately equally spaced. They also had low Q-values.

For the Difficulty scale about ninety students in sophomore psychology courses contributed statements describing the difficulty of the various courses they were taking. These statements were edited, grammatical and other errors being corrected and duplications being removed; one hundred statements were left. Judges then sorted these statements into stacks on the basis of the degree of difficulty they implied, with the range from 1 (least difficult) to 11 (most difficult). Fifty-two college students, mostly juniors and seniors, served as judges. The statements chosen for the final scale were those having median categories of placement about equally spaced and having low Q-values.

The completed scale, including instructions to the person using it, is presented below. The median category of placement and quartile deviation of each statement are also shown but were not included on the copy given the student. The score of one using the scale is the median of the scale values of the statements checked. The name of the course under consideration was written in the blank space at the top of the sheet.

DIFFICULTY SCALE

Degree of Difficulty of _____

This is a study to determine how difficult this course is. You will not be marked right or wrong as on an examination, since these are only statements of opinion. The statements below represent the opinions of some people on the degree of difficulty of this course, and we want to see whether or not you agree with them.

Put a check mark (√) in the parentheses in front of the statement if you agree with it.

Put an "X" (X) in the parentheses before the statement if you disagree with it.

Put a question mark (?) in the parentheses before the statement if you cannot decide whether you agree or disagree.

Every statement should have a (√), an (X), or a (?) before it, and no statement is to be changed in any any.

Scale Value	Q-Value	
1.5	.52	This course is one of the easiest courses I have ever taken.
11.0	.27	This is the most difficult of any course I have ever taken.
8.1	.76	Lack of interest makes this course difficult for me.
7.0	.54	This course is difficult but not especially so.
2.6	.65	This course is easy because the tests are easy.
5.1	.62	This course is easy but not especially so.
3.2	.67	This course is rather easy.
2.2	.79	This course is easy because lectures are vividly presented and easily remembered.
6.0	.26	This course is neither too difficult nor too easy.
6.9	.92	Many courses are easier than this course.
8.7	.70	The tests in this course are too difficult in proportion to the classroom work.
10.2	.65	This course is impossible for the average student to grasp.
9.1	.58	This course is fairly difficult at all times and extremely difficult sometimes.
5.7	.98	Only now and then is this course difficult. Sometimes it is extremely easy.
3.7	.86	Many courses are not as easy as this course.
9.7	.64	Most students find this course very difficult.
4.8	.77	This course is easy most of the time, but sometimes it is difficult.
7.5	.66	This course is rather difficult but not to an excessive degree.
3.3	.82	This course is fairly easy.
10.6	.58	This course has been difficult from beginning to end.
1.0	.26	This is the easiest course I have ever taken.

After the scale had been completed, its validity and reliability were investigated. In order to check its validity it was administered to one hundred fifty-nine students in four different courses, the particular courses being chosen because, according to student opinion, one course was very difficult (Course I); two others were only moderately so (Courses II and III); and another

was very easy (Course IV). Table 1 presents the results of this administration. (A positive critical ratio indicates that the course is more difficult than the total of the four, and a negative one, the reverse.)• That the scale finds the expected differences is evident at a glance.

TABLE 1.—COMPARISON OF COURSES THOUGHT TO BE VERY DIFFICULT, MODERATELY DIFFICULT, AND EASY

Course	Number	Mean	SD	SD_M	CR
I	54	8.00	.91	.125	8.28
II	33	6.82	1.78	.314	1.39
III	25	6.00	1.49	.304	− .97
IV	47	4.35	1.26	.185	−8.18
Total	159	6.33	2.00	.159	

The split-half method was employed for finding the reliability of the scale. The median value of the statements checked on the first half of the scale was correlated against the median value of the statements checked on the last half by the one hundred fifty-nine students mentioned. Here the coefficient of correlation was .795, which becomes .886 when corrected for attenuation. Thus the reliability and validity of the scale appear to be satisfactory.

RELATION OF INTEREST, VALUE, DIFFICULTY, AND MARKS

To what extent are the four variables—interest in a course, value of a course, difficulty of a course, and marks obtained in a course—related? In order to answer this question all three scales were administered to one hundred eighteen students in psychology courses (including fifty-eight students from Courses II and III above), and their final marks in the courses obtained. In all cases the scales were administered on the day of and just before the final examination, and students were assured that their instructor would not see their papers (although they were asked to put their names on them, in order that the intercorrelations might be obtained). With the exception of the twenty-five students in Course III, all students were from courses taught by the same instructor. Forty-one of the one hundred eighteen students came from sophomore courses and the remainder from advanced courses.

TABLE 2.—CORRELATIONS BETWEEN INTEREST, VALUE, DIFFICULTY, AND MARKS, AND MEAN AND STANDARD DEVIATION OF EACH

Variable	Coefficient of Correlation			Mean	SD
	Interest	Value	Difficulty		
Interest.....	....	.....	.....	7.64	1.38
Value.....	.652	.....	.....	7.74	1.10
Difficulty.....	.159	−.054	.....	6.78	1.60
Marks.....	.029	.086	−.329	1.19	.90

Table 2 gives the intercorrelations obtained in this part of the study, as well as the mean and standard deviation of each variable. (In averaging marks, an 'A' was counted as 3 points per semester hour, a 'B' as 2 points, a 'C' as 1 point, a 'D' as no points, and an 'F' as −1 point.) It is evident that only two of the coefficients of correlation are significant. Marks tend to be negatively related to Difficulty, though by no means strongly, and Interest and Value are positively and fairly highly correlated. The latter finding is in keeping with the correlation previously reported by Sartain and Waring.

COMPARISON OF INTEREST, VALUE, AND DIFFICULTY OF PSYCHOLOGY COURSES

A final question is the relative Difficulty, Value, and Interest of various psychology courses. In examining Table 3, where

TABLE 3.—COMPARISON OF INTEREST, VALUE, AND DIFFICULTY OF CERTAIN PSYCHOLOGY COURSES

Course	Number	Interest		Value		Difficulty	
		Mean	SD	Mean	SD	Mean	SD
Social.....	30	8.07	1.16	7.97	.93	6.93	1.37
Personality..	33	7.88	.99	8.06	.80	6.82	1.78
Statistics....	14	7.93	.83	7.07	.63	8.36	.90
Introductory	16	7.72	.90	7.56	1.03	6.19	1.04
Fields.....	25	6.56	1.85	7.42	1.48	6.00	1.49

the relevant data are found, it should be remembered that all courses were under the same instructor with a single exception (Fields). Generalizations from this table must be made cautiously, therefore, and especially so because of the small numbers in Introductory Psychology and Statistics. The position of the latter course with regard to Value and Difficulty, however, may furnish some additional evidence of the validity of these scales.

SUMMARY AND CONCLUSIONS

A scale for measuring the difficulty of college courses was prepared by the method of equal-appearing intervals and standardized on one hundred fifty-eight students in four different courses, the courses being selected because, according to prevailing student opinion, they varied from very hard to very easy. The Difficulty scale was then administered to members of five different psychology courses, along with previously validated scales for measuring interest in and value of such courses, and Difficulty, Interest, and Value were then intercorrelated and correlated against marks received in the courses. On the basis of the results obtained the following conclusions are drawn:

First, the Difficulty scale appears to be fairly valid, the course generally thought to be most difficult being found to be significantly so on the scale, and the least difficult one, significantly easier.

Second, the reliability of the scale is satisfactory, being .795 when computed by the split-half method and .866 when corrected for attenuation.

Third, Interest and Value are fairly closely related (r, .652).

Fourth, Difficulty and marks are negatively, though not strongly, related (r, $-.329$).

Fifth, other correlations were too small to be significant.

Sixth, there appear to be definite differences in the Value, Interest, and Difficulty of various psychology courses, although this point needs further investigation.

BOOK REVIEWS

ARTHUR E. TRAXLER. *Techniques of Guidance.* New York: Harper and Brothers, 1945, pp. 394.

Techniques of Guidance by Arthur E. Traxler is the case of an excellent book masquerading under an inaccurate title. Nor is the subtitle, *Tests, Records and Counseling in a Guidance Program*, any more satisfactory. Any text which devotes but one chapter of six pages to opportunities for young people, another of twenty-two pages to kinds of information needed, and still another of approximately the same length to case-study procedures in guidance can hardly lay claim to so ambitious a title.

What Traxler has done basically is to present a wealth of material on the use of the cumulative record in guidance. What should enter into such a record, how it should be recorded and used, and the values to be expected from its use are all adequately presented with considerable emphasis on the activities of the Educational Records Bureau. Indeed, the author specifically states in his Foreword (p. xiii) that the book consists of an "organization, revision and synthesis" of materials written for the Bureau's member schools "together with other material written specifically for it."

After a brief chapter dealing with the philosophy of guidance and another on opportunities for young people, the author considers at some length the areas in which testing should be undertaken, including useful lists of tests in each area, steps in planning and administering a test program, and recording and using the results. This constitutes the core of the book and is very well presented with a wealth of illustrative material. It is followed by inadequate treatments of the case study, the rôle of the teacher in guidance, the follow-up program, guidance in the adjustment of individuals and reading resources for counselors. There is a brief appendix dealing principally with the guidance of the veteran and the displaced war worker.

Throughout the book the author emphasizes the value of tests and measurement in a guidance program, but more particularly the key place played by the cumulative record which is conceived as the heart of the process of guidance. In fact, the book has overtones almost implying that the record is the important thing and the child merely happens to be a vehicle for it. While such an emphasis may have been desirable some years ago, the need for it has perhaps largely disappeared.

In spite of this, the book is an excellent, objective treatment of a limited aspect of the field of guidance and as such deserves both a better title and careful reading by counselors.

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MAY SMITH. *Handbook of Industrial Psychology.* New York: Philosophical Library, 1944, pp. 304.

The title of this book is misleading since it "is not intended to be a detailed chronicle of psychology from the industrial standpoint, but to provide an introduction to the subject for those who are in some way responsible for others, or who have to get on with others." The author aims to be practical and to humanize industrial psychology. After a brief outline of the background and of the more immediate questions in industrial psychology, the influence on the worker of environmental conditions such as lighting, temperature, ventilation, noise, and hours of work are presented. Discussions are based upon experimental findings. The rôle of individual differences is discussed in relation to selection and guidance, temperament, accident-proneness, sickness absence, and failure to adapt to the work environment. The important emphasis placed upon psychological factors is important and well done.

The author has had long and intimate contact with the Medical Research Council's Industrial Health Research Board and its activities. Much of the discussion in this book is based upon reports issued by this organization and by the National Institute of Industrial Psychology. Dr. Smith is thoroughly scientific and shows a desirable caution in interpretations and in pointing out limitations of the results.

Many readers will criticise the omission of reference to the large body of American literature in the field. Unfortunately, there is no index in the book. Although the author does discuss measurement, guidance and selection, the treatment tends to be in somewhat general terms. The vocational counselor, therefore, will need to go to other sources for measuring devices and for specific techniques of selection and counseling. Nevertheless, this is a worth-while and refreshing treatise, one which may be read with pleasure and profit by workers in the field.

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